

P.G Diploma in Solar Renewable Energy

PGDRE-101: Energy Sources and Energy Scenario

(52 Hours)

Sub Code: PGDRE-101	No. of Lecture Hours Per week : 04
Total Credit:04	Internal Marks : 30 and Exam Marks: 70=100

Objectives of the paper :

- To know the various energy sources
- To understand world energy scenario
- To understand the need of solar energy in the world

Module- I

10 Hours

Introduction to Energy :

Definition and units of energy and power, conversion, energy terms, calorific value, forms of energy, classification of energy sources quality and concentration of energy sources, energy and Thermodynamics, Energy Parameters, conservation of energy, Energy flow diagram to the earth. Origin of fossil fuels, Time scale of fossil fuels, Role of energy development and social transformation, Energy security.

Module- II

10 Hours

Energy and Growing Economy:

Commercial energy production, Final Energy Consumption, Energy Needs of growing economy, Long Term Energy scenario, Energy Pricing. Energy parameters, concentration of energy sources, , transformation, Energy security.

Module- III

Global Energy Scene :

10 Hours

Energy Consumption in various sectors, projected energy consumption for the next century, exponential increase in energy consumption energy resources, coal, oil, natural gas, nuclear power and hydroelectricity, impact of exponential rise in energy consumption on global economy, future energy options, Advantages and disadvantages .

Module- IV

12 Hours

Indian Energy Scene :

Commercial and No-commercial forms of energy, energy consumption pattern and its variation as a function of time, India's Power Scene, Gas-Based Generating Plants, Nuclear Power Programme. Urban and rural energy consumption, energy as a factor limiting growth, need for use of new and renewable energy sources, socio-economic impacts, Rural Development, poverty alleviation, Employment; Security of supply and use, Environmental and ethical concerns, Economical aspects of renewable energy systems vs large hydro and thermal power projects.

Module-V

10 Hours

Policy programmes, regulations:

Policy support for Grid Interactive Renewable power: Electricity Act 2003, National Electricity policy 2005, Tariff Policy 2006, National Rural Electrification policies 2006, Renewable power policy, other support programmes of MNRE, Regulatory issues of coal, oil and gas.

References

- Chetan Singh Solanki (2008), Renewable Energy Technologies; A Practical Guide for Beginners, PHI School Books
- D. Mukherjee (2011) Fundamentals of Renewable Energy Systems Paperback –, New Age International Publisher; First edition
- Dr. H. Naganagouda (2014), Solar Power Hand Book, Director, NTC for solar technology , Banagluru.
- G.D Rai, Non-conventional Sources of Energy , Khanna Publishers, Delhi, Other relevant books also be used.
- Kothari D.P. and Signal K.C (2011) Renewable Energy Sources and Emerging Technologies, New Arrivals –PHI; 2 Edition